COAL MINING

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January, 1955

Volume 32, No. 1

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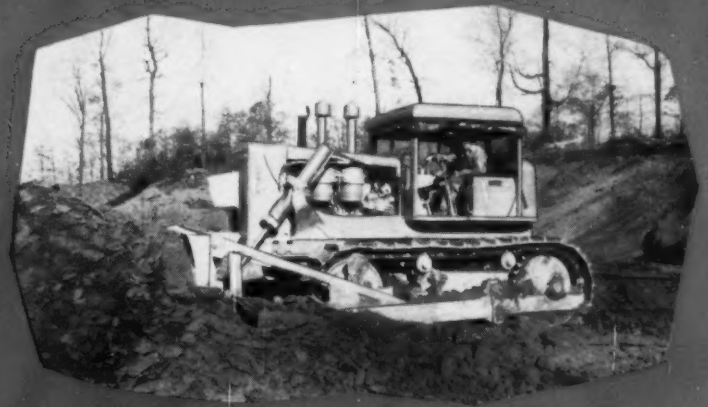

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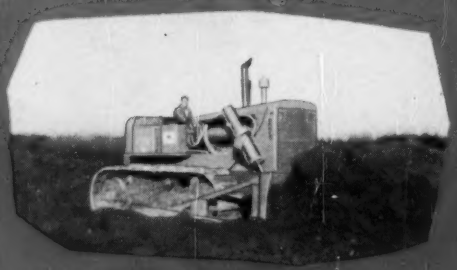

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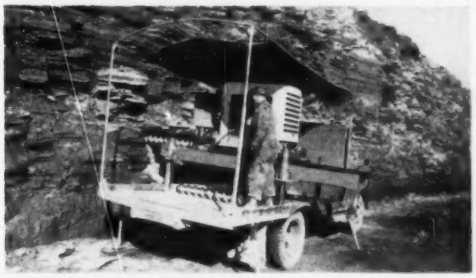

TRUCK-MOUNTED HORIZONTAL

● Satisfied customer reports, "I drill so many more feet per minute with my McCarthy than I did with my old jet rig that I quickly recovered the low initial purchase cost."

VERTICAL DRILL

● "Amazing savings," says Owner-Contractor J. F. Nichols. He drilled six-foot-deep blast holes in 40 seconds each as against 30 minutes each with wagon drills, claims savings of $7500 per month. "Greatest purchase I ever made," says Nichols.

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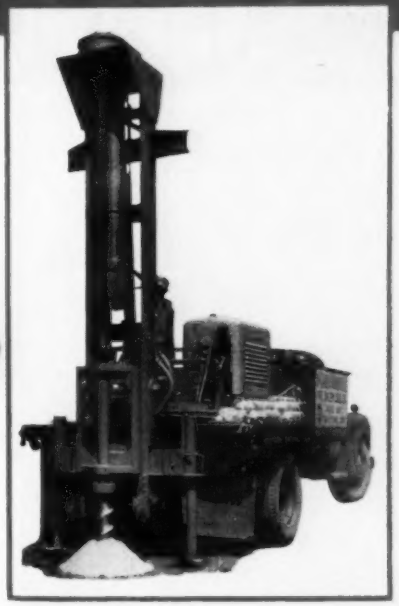
● A New Castle, Pa., operator reports boring "840,' various depth holes through shale and sandstone, in one working day." Bores 6" and 8" diameter holes at rate of 6' per minute maximum.



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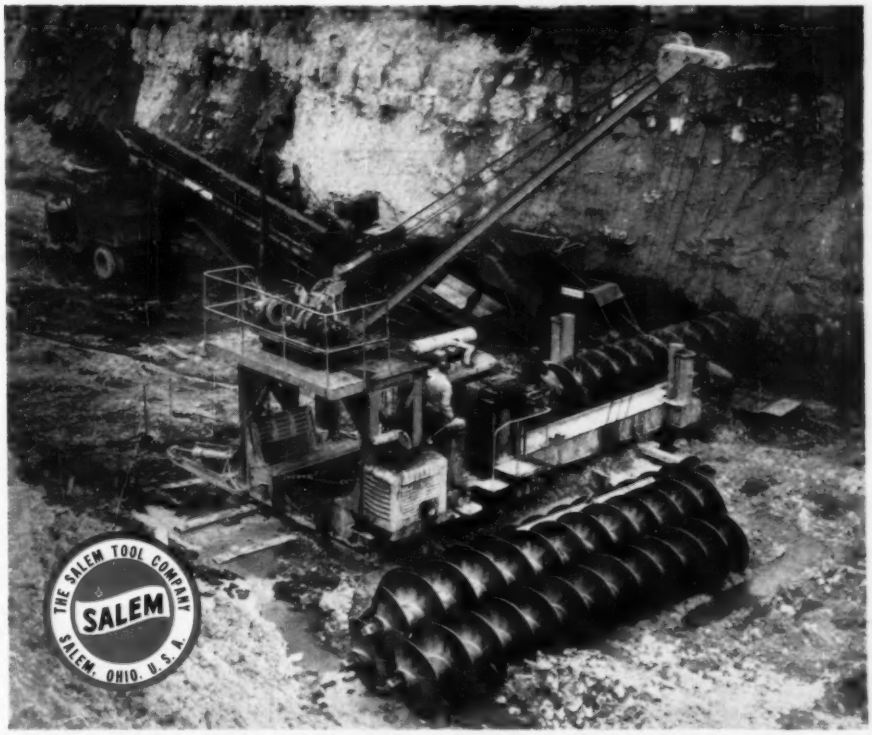
● Robert B. Cleghorn, Jr., Hodgeville, West Virginia, reports his hydraulical, self-moving 42" McCarthy Coal Recovery Drill mines "up to 500 tons of clean, low-cost quality coal per day." Cleghorn has a three-man crew—operates in pits as narrow as 34 feet. Operator has total vision, including the highwall. Model 12 handles 24' augers from 16" to 48" in diameter.

● Other McCarthy Coal Recovery Drills handle augers 4', 6' and 12' in length.



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COAL MINING

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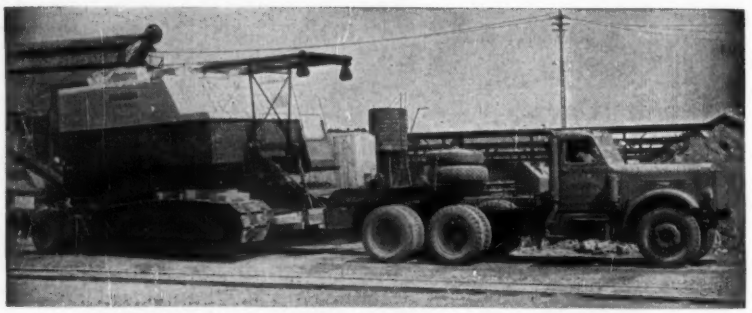

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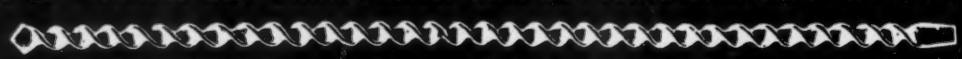

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CAT DIESEL MOTOR GRADERS Work Longer for Less

Because Caterpillar builds *every* major component of its Motor Grader, constant improvements are possible in design, balance and operating features. Typical of this continuing program are the recent No. 12 Motor Grader improvements. Among them were: horsepower increased to 115; in-cab starting; higher reverse speeds and other improvements. With power, weight and speed matched, you get more work done faster on less fuel. The sensitive governor feeds just enough fuel to produce ample power for handling any load on the correctly curved moldboard. Fuel is burned cleanly and completely for full power output.

A ruggedly reinforced box-beam frame makes sure that the grader can take this big work load for years . . . and this design has paid-off—for 99% of all Cat Motor Graders ever built are still working and many of the veterans use less fuel than newer machines of other make. We can give you further proof of performance in a demonstration—on *your* job!

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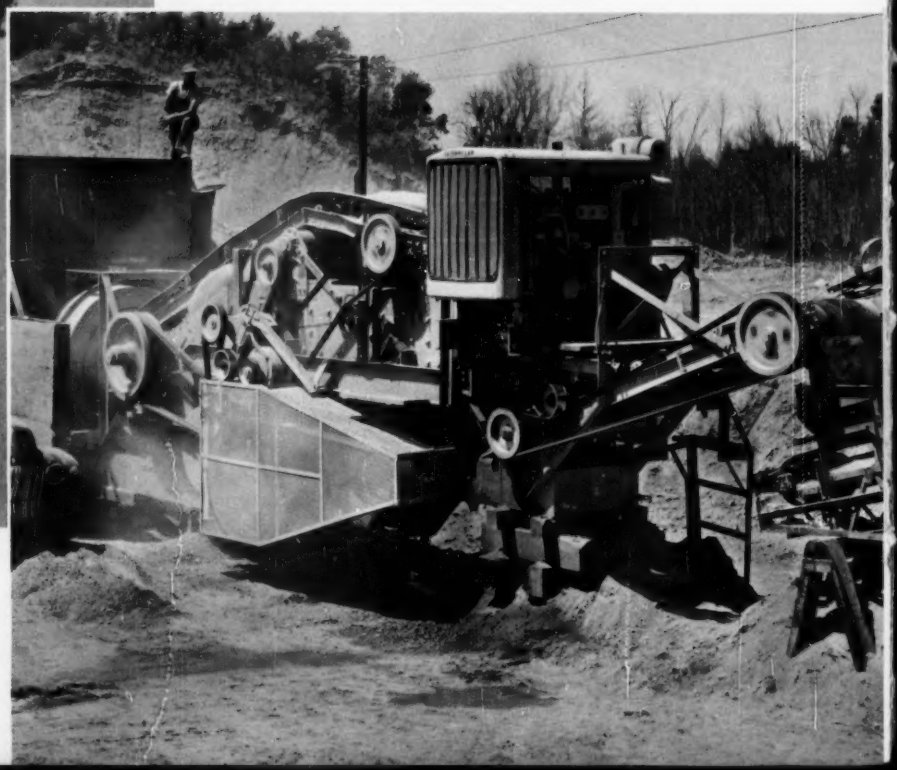


Follow this series of messages from your Caterpillar Dealer. They will tell you why he can save you money.

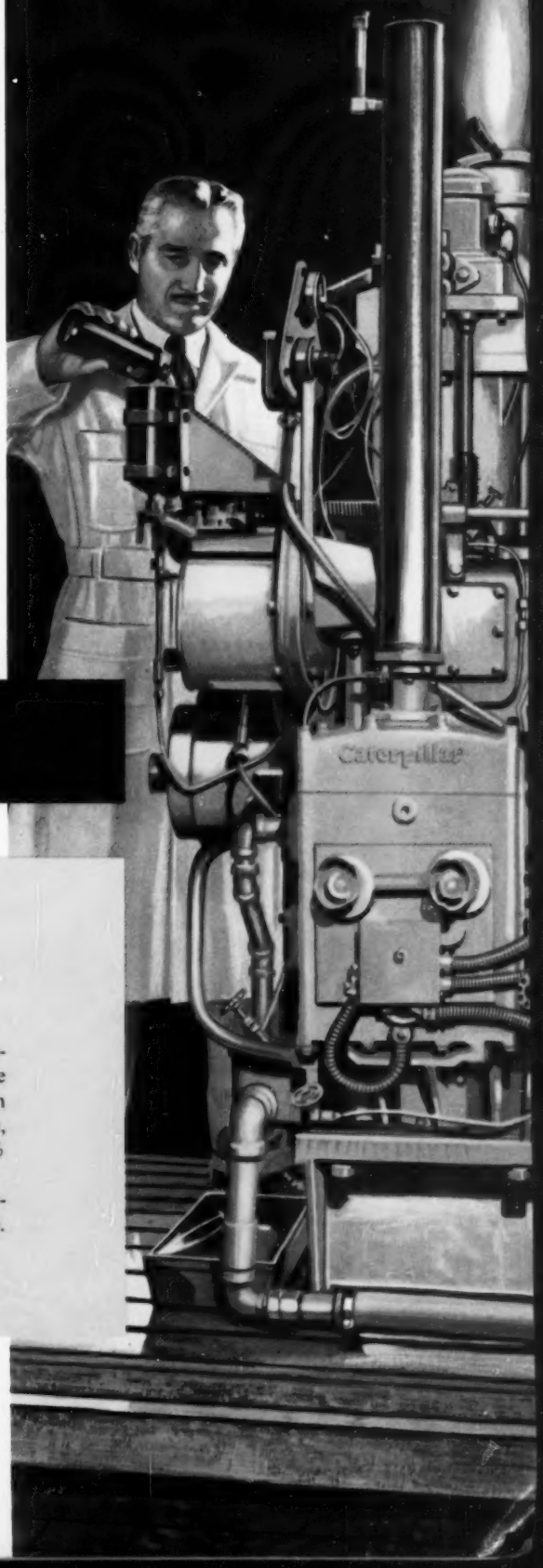
AN "OIL STRIKE"... THAT PAYS YOU A PROFIT!

Again, let us take you behind the scenes at the Caterpillar factory. This research engineer is "exploring" oil. He's testing diesel fuels in a special one-cylinder test engine . . . testing for power qualities . . . testing for wear factors . . . testing for ignition quality. His job never ends, as Caterpillar Research men search for and find the answers that give you new economies . . . better performance.

Similar endless tests pry open the secrets of lubricating oils that add hundreds of extra hours of life to CAT* Diesel Engines. Piston, ring and bearing designs put into practice these secrets of research that mean so much to performance.

For years, Caterpillar has worked hand-in-hand with the oil industry to bring you better lubricating oils. For example, the first detergent oils resulted from this combined effort. More recently, the vastly improved Series 2 oils have been a further contribution to progress. Most important, Caterpillar has been the leader in making use of these milestones of progress in lubricating oils.

These are some of the reasons why we—your Caterpillar Dealer—can tell you more about fuel economy and long life.



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CAT DIESEL POWER UNITS SAVE UP TO 80%

Cat Diesels are free of time-wasting fuel system trouble that cuts into production. With no operating adjustments, you just start them and they take care of themselves. Foul-proof, single-orifice injectors, and pre-combustion chambers give complete combustion whether you're running at low idle, part load or full load—*and* on No. 2 burner fuel—saving as much as 80% over gasoline engines, as much as 15% over other diesels.

You can match your needs exactly from the complete line of honestly-rated Cat Diesel Engines . . . ask our power experts to give you a hand.

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Clock the loading time of a Caterpillar Diesel Tractor-Scraper team. The load boils into the low, wide bowl quicker because there's a minimum of drag. Working-weight in the scraper means the tractor's power goes into loading pay yards instead of pulling dead iron. Shorter loading time cuts full-power running time *and* fuel consumption.

Check the loading time of a Cat Diesel Tractor-Scraper team on your job. We'll be glad to prove how you can get full power efficiency for full payloads. ***Name the date . . . we'll demonstrate!***

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CATERPILLAR LOOK TO THE DEALER BEHIND THE PRODUCT.

Do You Know?

● The coal miner who is a breathing cripple, unable to work because of "smothering," shortness of breath, cough and chest pain, is in many cases actually suffering from emotional stress much like the combat fatigue of soldiers.

With proper treatment, both physically and psychologically, many of these breathing cripples could go back to work in the mines or elsewhere, Drs. W. Donald Ross, Lee H. Miller, H. Halbert Leet and Frank Princi of Cincinnati report in the Journal of the American Medical Association.

Of 40 miners they examined, more than half were suffering from emotional as well as physical disorders and about a third from emotional difficulties alone.

Years of hard work in dangerous circumstances, together with living through mine disasters that killed friends, played the chief part in making these men victims of a kind of combat fatigue. The breathing symptoms and disability relieved their anxiety about accidents, but being out of work made them feel insecure and deprived them of an outlet for aggressive feelings that had built up since early childhood days of poverty and hardship.

Improvement in mine safety and earlier recognition and suitable treatment of the miner's emotional stresses are recommended by the Cincinnati physicians and psychiatrists.

● People who leave their work every day feeling "shot" are costing American industry billions of dollars each year.

Elmer F. Twyman, vice-president of The Yale & Towne Manufacturing Company, said much fatigue could be eliminated by a substitution of modern materials-handling equipment for old back-breaking methods.

Fatigue studies reported by Yale & Towne, the Gulf Coast Regional Conference on Industrial Health and the U. S. Bureau of Mines found:

More deaths occur among industrial workers than among clerical workers of the same age.

Production losses due to fatigue are greater than compensated claims.

Fatigue induces inaccurate movements, lessened ability to perform, and decreased productivity and efficiency.

Fatigue increases accidents and proneness to accidents. It also raises absenteeism, lowers the quality of production and reduces the worker's mental aptitude.

Furthermore, more materials are spoiled, morale is hurt and resentment builds up among the workers because management has not done all it could to relieve unnecessary fatigue.

This physical and psychological wear-and-tear on the man decreases his power to work, the joy he gets out of his work and even the pleasure he derives in the hours spent away from work.

Here and There in the Coal Industry

● A fifth generation coal miner, Robert M. von Storch has been appointed Superintendent-Coal Mines and Quarries, Columbia-Geneva Steel Division, U. S. Steel Corporation, L. J. Westhaver, Division General Manager-Operations, announced. Mr. von Storch succeeds Frank V. Hicks, who retired effective November 30, 1954.

ROBERT M. von STORCH

Mr. Westhaver also announced that James Cassano has been appointed Superintendent of the Division's Columbia Coal Mine located near Dragerton, Utah.

Mr. von Storch grew up in the coal mining country in Scranton, Pennsylvania. He studied civil engineering at Pennsylvania State College for four years then went to work for the Hudson Coal Company of Scranton as an engineer. Later he worked in the mines as a laborer and as a mine contractor. He was superintendent of the Loree Division of the Hudson Coal Company when he came to Utah as superintendent of the Columbia Mine.

Mr. von Storch is a member of the American Institute of Mining Engineers, Phi Gamma Delta fraternity, the Elks, and the Carbon County Country Club and is a qualified Pennsylvania State Mine Inspector. He and his wife, the former Agnes Mathews, are the parents of two daughters, Liesel who is a student at Connecticut College for Women and Christina.

Mr. Cassano was formerly supervisor of Industrial Relations-Mines and Quarries. A native of Nalicio, Italy he graduated from the Colorado School of Mines in Golden with an engineer of mines degree. He has wide experience in western coal fields. During World War II Mr. Cassano served as a Lieutenant Colonel in the Corps of Engineers in Europe and was responsible for the rehabilitation of European coal mines at the conclusion of the hostilities.

He and his wife, Wanda, live in Dragerton, Utah.

● E. H. Reichel, director of Research and Development Division of Pittsburgh Consolidation Coal Company, announced the appointment of John A. Phinney to the position of research manager.

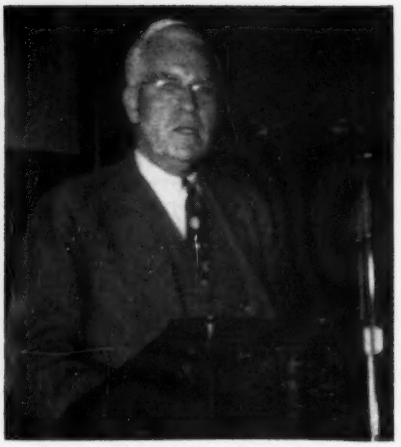
Mr. Phinney holds a master's degree in Chemical Engineering from M.I.T. where he graduated in 1939. His experience includes positions with Standard Oil Company (Indiana) as a process engineer, research supervisor in the field of natural gas conversion with Stanolind Oil and Gas Company, and chief process engineer in coal conversion with the research departmen of Pitt Consol, where he started in 1948.

He holds various patents in the field of natural gas conversion to synthetic liquid fuels, and in the field of coal conversion.

He is a member of the American Institute of Chemical Engineers, and the American Chemical Society.

● The Cleveland-Cliffs Iron Co., and the Island Creek Coal Co., Huntington, W. Va., will be associated in the coal business through the sale of Cliffs' Coal Marketing Division and the Duluth and Port Huron docks to Island Creek, and through them the sale of the Green Bay, Wis. dock, as Cliff's interest in the Escanaba Coal and Dock Co., to the C. Reiss Coal Co. of Sheboygan, Wis. Completion of these changes is expected to be effectuated as of Nov. 1st.

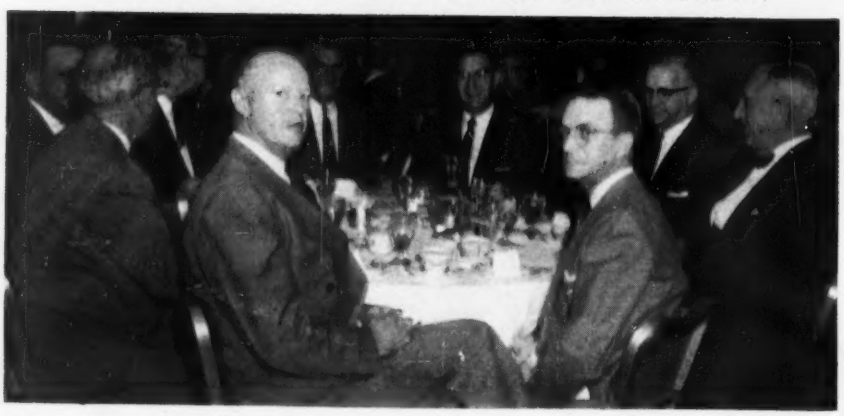
Left: Geo. H. Love, F. R. Amos, J. H. Dent, Mrs. Amos, Sen. J. H. Walker, Mrs. G. A. Shoemaker, R. L. Ireland, G. A. Shoemaker, R. F. Kent, representatives from the Pitsburgh Coal Co., and both political parties



Mr. C. L. Campbell, President of the Assn., presenting his paper "Coal's Position in our National Economy."

J. C. Loos, H. W. Smedley, Mr. and Mrs. Ray Carson, Ray and Mrs. Middleton, Roberts and Schaefer Co.; Charles and Mrs. Shoffner, Allegheny River Mining Co.; Tex Norman, National Association of Electrical Constructors.

Left: Walter F. Schullen, V-Pres., Pittsburgh Consolidation Coal Co.; Harry A. Sutter, Exec. V-Pres., Western Penna. Coal Operators Association; Hon. Edward Ewing, and James Lovett, both members of house of Rep. Penn.; D. L. McElroy, J. B. Morrow, Alford-Morrow Asso.; Mrs. Walter Schullen.



Thirty-Seventh National Coal

It is at meetings like the 37th Anniversary of the National Coal Association that government discrepancies in an industry or in our national security can be pointed out to the general public as well as to government officials. It is by its impact on public opinion that the success of a meeting like this is judged. As long as such dangerous discrepancies against an industry or our Nation are made universally known, as they have at this meeting, this Association will never fail in its purpose.

Developments in science and technology are profoundly affecting the future of our industry. We must acquire new knowledge to solve the problems of our time. We need in our industry more people with brains trained to better deal with these particular problems.

We must realize that competitive strength must come from our own excellence in mine operating science and technology. The urgency of our task grows as we look expectantly to new advances in scientific and engineering developments. The sound development of the coal industry depends on the advancement of engineering and its ally engineering education. Wherever engineering education lags, economics and social advancement lag.

Modern machinery can effectively diminish a substantial portion of our economic ills. As long as we have attendance to gatherings like the men at this meeting, however, there is reason to believe that the problems in our industry can be solved.

Tom Pickett, Secretary of the Assn. making his report.

Anniversary Association

"Coal's Place In Our National Economy"

by L. C. Campbell, President

"Coal's Place in Our National Economy" is the theme of this, the Thirty-seventh Anniversary Convention of the National Coal Association. The United States is blessed with an abundance of coal for heating, industrial power, metallurgical reduction and chemical processes. Can there be doubt in the mind of any man that our national economy has been built on coal; that it depends upon coal today, and will continue to depend upon coal to expand its industrial greatness. By reason of an abundance of coal we Americans can afford the myriad of materials and services which it provides. Coal is the difference in peace, in defense preparation, and in war between those who have it and those who do not have it as an abundant natural resource.

The National Coal Association, organized in 1917, held its first general meeting in Pittsburgh, here in the William Penn Hotel on October 23rd of that year, and the accounts in the Pittsburgh newspapers described it as the largest meeting of coal producers ever held in the United States.

W. K. Field, first president of the National Coal Association, who was president of the Pittsburgh Coal Company, presided.

We were in the midst of World War I. The Federal Fuel Director, Dr. H. A. Garfield, speaking at that convention, said he expected our industry "to produce all the

Left: Mrs. Henry F. Warden, A. R. Matthews, Pres., Pocahontas Coal Co.; Henry E. Warden, Pres., Pocahontas Coal Operators Association; Mr. and Mrs. Wm. Grunnagle, guests; Albert F. Arbury, Pocahontas Coal Operators Assn.; L. R. Page and W. F. Leatherman, Crozier Coal and Land Co.

Left: W. L. Wearly, H. A. Montag, J. Lawrence, John D. Ruzzell, J. D. A. Morrow, Harrold Wheeler, N. E. Nyquist, W. J. Burke, Russell C. Vance, all with the Joy Mfg. Co.

Left: S. C. Wagner, George R. Collins, both with Smokeless Fuel Co.; R. H. Kelly, Pres., Fourseam Coal Co.; B. B. Houseman, Secretary, Pocahontas Operators Assn.; H. R. Hawthorne, Gen. Council, Pocahontas Fuel Co.; W. J. German, Pocahontas Fuel Co.; Paul Morton, Lake Superior Coal Co.; Richard C. Luther, Exec. V-Pres., Peerless Coal and Coke Co.

At this table are: Mr. and Mrs. D. K. Mackenzie, Vice President of Castner, Curran & Bullitt, Inc., New York, N. Y.; Mr. and Mrs. H. J. Spear, Asst. General Manager of Sales, Eastern Gas & Fuel Associates, Coal Division, Pittsburgh, Pa.; Mr. and Mrs. L. J. Lowell, Asst. General Manager of Sales, Eastern Gas & Fuel Associates, Coal Division, Pittsburgh, Pa.; Mr. and Mrs. L. A. Brown, Assistant Vice President, Eastern Gas & Fuel Associates, Coal Division, Pittsburgh, Pa.; Mr. and Mrs. A. P. Boxley, Production Manager, Eastern Gas & Fuel Associates, Coal Division, Pittsburgh, Pa.

coal that we have a right to expect . . . and more," for the nation's wartime needs.

THAT HAS BEEN THE PLEA IN EVERY TIME OF WAR OR NATIONAL EMERGENCY AND COAL PRODUCERS HAVE NEVER YET FAILED TO MEET THE CHALLENGE.

Our Association met here again in October, 1937. J. P. Williams, Jr., of Pittsburgh, then president of the Koppers Coal Company, was president of the National Coal Association, and George H. Love, now president of Pittsburgh Consolidation Coal Company, served as Chairman of the Pittsburgh Convention Committee.

Ninteen hundred and thirty-seven was not a golden year for the coal industry, nor for the United States. Everyone had discovered that national recovery from a depth of depression was a slow proposition, despite all the pump-priming; and the preliminary rumblings of the Second World War were already audible.

When we met here in 1937, coal men had their own special problems arising from the efforts of the Government to establish minimum prices for coal, as required by the terms of the Guffey Act.

This year, on our Association's 37th Anniversary, we are meeting again in Pittsburgh in the very heart of industrial America. We are returning, so to speak, to the place of our birth. We come back for renewed vigor. The Pittsburgh "Renaissance," visible on all sides, is indeed a challenge to the coal industry for such invigoration.

Geo. H. Love, President, Pittsburgh Consolidation Coal Co. addressing the Association.

COAL, OUR COUNTRY'S NUMBER ONE ENERGY RESOURCE, AND A FOUNDATION STONE OF THE NATION'S ECONOMY, IS PRESENTLY BESET WITH MANY DIFFICULTIES. We are in the throes of a changing fuel economy. There exists a tremendous conflict of application of the energy supply available from coal, oil, natural gas, and electricity. There needs to be a national fuel policy to correct the blind, destructive, uneconomic condition which is destroying the nation's fuel birthright. Future generations cannot be expected to applaud the present day spectacle of mis-application of oil and gas when reserves of those essential fuels are gone, and coal remains the only enduring bulwark of our fuel needs.

In spite of all of this, the long-range future of coal was never brighter; its field of national usefulness never before so great. The slogan of this convention, "Coal's Place in Our National Economy," is borne out by the fact that coal has indeed been the keystone of our industrial progress.

The record of progress in the coal industry in the past 37 years since the National Coal Association was founded, is one of which we are rightfully proud. Our gains in improved methods of mining and the preparation of coal have been prodigious. These gains have also been matched by increased efficiencies and economies in the use of coal.

The gains have been achieved by skillful engineering and constant research and mine mechanization in underground mining, on a scale of which the mine operators of an earlier day never dreamed. These gains have been achieved by expenditures of hundreds of millions of dollars for new plants and new equipment. There has also been a tremendous modernization of old mining plants. In addition, production gains have been achieved by the introduction of surface mining, until its expansion of plant and equipment accounts for roundly one-quarter of the total annual output of coal.

In 1917, the year of our first meeting, the mine output of bituminous coal was 551 million tons. To get this out of the ground and on to railroad cars required a labor force of 600,000 men. The miners put in 8 hours of actual working time, and the per man day output averaged 3.77 tons.

Twenty years later in 1937, when we met here again, mine output was 455 million tons and the total labor force that year, as reported by the U. S. Bureau of Mines, was not quite 500,000. In 1937, the miners worked 7 hours per day and the per man day output was reported as 4.69 tons.

Last year we mined 453 million tons of bituminous coal with a labor force of roundly 300,000 . . . a little more coal last year than in 1937, and produced with forty per-cent fewer men. It should be noted also that although paid on an 8-

Left: D. J. Howe, N & W RR.; H. Homan, So. Appalachian Corp.; Harry Gandy, Jr., National Coal Assn.; E. W. Broechl and H. C. Wood, Sahara Coal Co.; S. Austin aperton, Slab Fork Coal Co.; Harry F. Oyden, S. Caperton, Jr., A. J. Walker, Slab Fork Coal Co.; E. Weinhalie.

hour basis, the productive working time in the underground mines at present is usually not more than 6½ hours. The man day output for all bituminous mines last year, surface and underground figured together, averaged 8 tons. These figures represent a gain in operating efficiency unmatched in so short a span of years.

LET ME UNDERSCORE ALSO, THE FACT THAT THESE GAINS IN PRODUCTIVITY HAVE BEEN ACCOMPANIED BY EVEN MORE STRIKING GAINS IN MINE SAFETY. Measured in terms of the frequency of injury per million tons, today's bituminous coal miner's job is five times safer than his father's job forty years ago, and twice as safe as it was fifteen years ago.

Engineering for safety, with new knowledge and new equipment for the industry, coupled with education against the peril of carelessness, will help the industry set ever higher standards of safe mining.

To reduce the per ton cost of mining coal, and to increase the heat and power per unit of coal burned, are the objectives of an unending search by coal producers and coal users.

The electric utilities, which today are coal's largest customer, afford a striking example of the gain in efficiency in the use of coal. In 1920, electric utilities were burning 3 pounds of coal to obtain one kilowatt hour of electricity. That was the average rate. In the early 1930's, it was 1½ pounds of coal per kwh. This year the national average figure is down to one pound per kwh.

That means that one ton of coal today in electric power generation does the work that not many years ago required three tons. It means that at the 1920 efficiency rate the electric utilities would have required almost 350 milion tons to obtain the 218 billion kilowatt hours of electricity which were generated with coal last year. The actual amount of coal burned under electric utility boilers last year was 116 million tons, a new all-time high.

The one-to-one ratio pounds of coal to kilowatt hours is due to go much lower. Further gains in efficiency are already in sight. Some of the newly built electric generating plants are burning coal with

Phil. Estes, Secretary, Coal Exporters Assn. reporting progress of his Association.

results far below the average pounds per kilowatt hour.

You will hear from other speakers at this convention discussion of the part coal seems destined to play in the field of electric energy in the years ahead. Let me merely remind you that coal at present accounts for one-half of the entire electric output, and if we exclude water power and consider only the mineral fuels, coal accounts for two-thirds of the total. The consensus is that the share of coal in total power generated is not likely to diminish as far ahead as can be seen; indeed, its share may increase. The share of hydro-electric power in the total output of electric energy is steadily declining. The prophecy is that electric power required will be many times that of the present.

A population of 190 million will be served by electric utilities burning an estimated 350 million tons of coal in 1975. We shall be sending more and more coal into industrial plants and into homes over electric wires instead of by train and truck. The British Thermal Units — 13,000 to 14,000 of them per pound of coal — will indeed be king in an ever-expanding national power load.

The leaders in the field of atomic power all stress the thought that the day is a long way off when atomic electric power will be competitive with electricity produced by conventional fuels; that the nuclear power plants now projected cannot be expected to supply more than a tiny fraction of the expected total of electricity required.

Our immediate concern is not with what unquestionably appears to be a bright future, but with the present predicament of the coal industry's curtailed output and vanished profits. There will be much discussion of the contributing causes in these two convention days. I would like to mention briefly only some of them.

The workmen who mine the coal are paid the highest daily earnings of any industry group in the country, while the earnings of coal producing companies are the lowest of any of our basic industries, and even those earnings for a great many companies almost drop out of sight. The tragedy of displaced workmen at the same time stalks every coal field in the country. Many producers are attempting to pay not only these high wages for a limited productive work day but also fringe benefits, out of losses.

Left: G. G. Garland, Secy., and Gen Council, D'Arcy Porter, Sales Mgr., Carl J. Mulert, V-Pres., John H. Lucas, director, H. B. Salkeld, Pres., M. J. C. Kornblum, Sales Mgr., all with the Tasa Coal Co.; Norman Simms, American Cyanamid Co.; Shirley V. Dougherty, Tasa Coal Co.; Howard Steidle, Executive Eng., R & P Coal and Iron Co.; Ralph E. Dougherty, Jr., V-Pres., Operations, Tasa Coal Co.

The chances of being able to continue to do that are remote for a great many producers. The chances of recapturing markets appear to be even more remote. Those markets are currently being served by a large tonnage which reaches the customer without fringe costs and high labor rates. There needs to be a re-appraisal of this situation by all concerned in the interests of jobs for workmen and competitive business standards for the industry.

The transportation costs of coal as applied by the carriers and sanctioned by government have been built into a non-realistic freight rate structure. The simple fact appears to be that coal is being called upon to bear more than its fair share of the total cost of railroad operations. Efforts to hold business for coal in highly competitive markets accordingly suffer, as it is the delivered price of coal that counts. The freight cost is very often in excess of the at-the-mine cost of the coal. There also needs to be a re-appraisal of this situation by all concerned.

Coal has been hurt by the unrestricted importation of cheap residual fuel oil which has poured into the Atlantic and Gulf ports, principally from Venezuela and found its way under industrial boilers, displacing coal. It is now appearing on the Pacific coast as a threat to domestic produced fuel oil. This does nothing to help the domestic oil industry. It is of no lasting benefit to any class of U. S. fuel users. Its importation tends to encourage dependence on a foreign fuel supply that would be almost instantly cut off in the event of war. It profits no one but the foreign refineries and traders seeking an outlet for the left-overs of the refining processes. Here again there needs to be a re-appraisal of what this situation is doing, not only to coal but to domestic oil trade.

It is regrettable that efforts to obtain from Congress needful legislation to restrict these imports have not yet met with success. The coal industry should continue to seek remedial action. The Executive Branch will have this problem for consideration, along with others pertaining to the over-all fuel economy of the country. This needs affirmative action from the Executive and Legislative Branches.

Natural gas now reaches into virtually every state. Only one, Vermont, does not yet have natural gas service, either on an existing, or on an authorized and imminent basis. It is a formidable competitor to coal in some areas, and is part of the pattern of the changing fuel economy.

Natural gas resources are so limited, when measured in terms of our total energy resources and our total energy requirements, that we have contended that this gas ought not to be wasted under industrial boilers where coal would do as well or better. It ought to be confined to the superior uses for which it is best adapted in the interest of the national economy. It should receive a price in the market place commensurate with its true worth, in the interest of those in whose land the gas originates.

We have objected in the past to having a government agency in Washington fix prices which the owners of gas at the well should be permitted to obtain for their product. We have opposed the importation in the United States of natural gas from Canada.

In my remarks at our Convention a year ago, I expressed the view that our greatest need was a better realization ourselves, on the part of our customers, and federal and state authorities, of the simple fact that the coal industry must ask and must receive a fair price for its product if it is to remain healthy. Surely, events of the past twelve months have given added pertinence and force to that observation. We have seen the consequences of failing to obtain, and in many cases, I fear, failing to ask, a fair price for coal.

Our customers, the press, government agencies and the Congress, all give lip service to the proposition that the coal industry is one of the great defense bastions of the nation, and must be preserved in good operating condition; that to do less is to trifle with disaster. There has been little disposition to match talk with actions until recently. It is gratifying to see signs of action on the part of the government, and an increasing awareness of what it would mean to the nation to continue the dismantling of a great industry by reason of unfair competition and profitless production. There are encouraging signs and action in many quarters, and I should not pass on without mentioning some of them.

We have today a Governor's Fuel Conference, the sequel to a meeting of the Governors of the coal states called last spring by Governor Fine of Pennsylvania to consider ways and means for helping coal. Real progress has been made in the conferences which have been held and a program of action is outlined for future meetings.

The White House too, is taking a hand. Conferences with President Eisenhower in the late spring resulted in the appointment of an interdepartmental six-member committee headed by Dr. Arthur S. Flemming, Director of Mobilization, to examine the plight of the coal industry and the various proposals that are within the area of governmental action.

A further step that we hope may prove helpful was the appointment by the President of a committee at Cabinet level to deal with the over-all question of public policy respecting energy supplies and resources; that is to say, our energy resources of all kinds and the production facilities of all kinds.

These various conferences, councils, committees and inquiries did not just happen. They were the outcome of the concerted efforts of those who have the interest of coal at heart; mine management and mine labor, members of Congress in coal mining districts, businessmen, railroad men, bankers and many others.

Never before have responsible executives in our industry manifested so great concern and sought so wholeheartedly to awaken governmental policy makers to the facts concerning the production, distribution and consumption of coal; to awaken governmental policy makers to the severity of the industry's present difficulties . . . and the fact that many of these difficultities are caused by things beyond the industry's control . . . and that some of these difficulties are directly attributable to unwise governmental action or lack of action.

It takes governmental action to halt imports of residual oil, to change railroad rates, to restore a prudent balance in the distribution of natural gas.

The government should take a new look at its fuel purchase poli-

cies which are proving so destructive to coal in a variety of ways; sometimes by buying coal on a basis that raises havoc with existing coal producing facilities; sometimes buying other fuels when coal could be made to serve as well or better and when it is in the public interest to preserve the greatest possible number of outlets for coal.

We have raised the question of whether the government, as a matter of national policy, should use coal in all government buildings and installations both in Continental U. S. and overseas, where readily available.

We believe that our government should do all that it can to induce European Governments to remove restrictions which discriminate against the importation of coal from the U. S.

We are dealing with the question of what part the government shall play in the field of research and the development of facilities for the production of synthetic fuels.

Bituminous Coal Research is closely allied to the National Coal Association and has many research projects underway. We have only a few producers with resources large enough to support extensive research on their individual account, but those that are able, are doing notable work in the research field. The manufacturers of machinery and equipment, useful in mining, as well as the manufactures of equipment in which coal is burned, are doing much and with conspicuous success.

Research in the field of coal chemistry and synthetic fuels is going on at a good rate. The government, which had a considerable part in this program, has recently withdrawn from much of it. There needs to be a re-examination of the part that government should continue to take in coal research in the interest of maintaining a healthy industry and assisting this basic raw material to find additional markets in coal industry.

The National Coal Association is taking an important part in all of the various efforts to strengthen the position of coal in competitive markets, and to gain for coal the treatment from the agencies of government which coal merits and must have if it is to prosper.

It has ably represented the industry before Congressional committees and the Executive departments.

The program of market promotion which the National Coal Association has been carrying on for some years, and which is continuing in new channels that promise even greater usefulness, will be fully described by other speakers.

There never was a time when the need was greater for concerted efforts to meet competitive fuels on more even terms, and to obtain for coal a fairer share of the total fuel market. There never was a time when the industry's need was greater for the services which our National Association is in a position to render and which, I am glad to report, it is rendering in full measure.

It is well that we come together in these annual meetings for realistic examination of our problems, and for a round-table discussion and exchange of views.

My hearty thanks and appreciation to the many committees which have worked on the problems of coal through the years, and to the entire staff working for National Coal Association who have rendered excellent service on every occasion. The Program Committee and all of its members likewise deserve a full measure of appreciation of the job which it did in putting together an excellent program for these few days. I am confident that this meeting will generate new ideas.

Although beset with so many difficulties, we face the future with a stout heart and conviction that better days for coal are ahead, and that the American coal industry will continue to maintain its world leadership in the output of a primary natural resource as vital to modern civilization as air and water.

Some of the things on which that conviction is based, and some of the things which coal and industries closely related to coal are doing to bring these better days, will be told in the reports which are to be presented here today and tomorrow and by the speakers listed on the program.

Let's face up to the fact that with a full recognition of these problems the men and management of the coal industry can and will, with such aid as the government has to afford, preserve a dependable fuel economy for the nation in time of peace and war.

Coal and Kilowatts

National Coal Association
November 18, 1954

by A. C. Monteith
Vice President in Charge of
Engineering and Research
Westinghouse Electric Corporation

We at Westinghouse are proud of the relationship we have with both the Coal and Electric Utility Industries. It is nice to know that you, as well as the electric utility people, consider us a member of your industry family.

Even though we are close to the problems that beset both industries, we are, nevertheless, in a unique position to consider them in a completely objective way. It is from a position of objectivity that I would like to review with you the future of coal in the electric utility industry.

There has been a tremendous amount of conversation and writing about atomic power and its eventual displacement of other sources of energy. It is inevitable that the atom will become important in our way of life. When, in some years from now, more conventional sources of energy begin to disappear, atomic power will be indispensable to our welfare and defense. This day of need for atomic power may not be so far away as might first be suspected depending on the time scale used. Therefore, at Westinghouse we are striving dilligently to develop economic; efficient atomic power generating plants.

At the same time, we believe that the coming of practical atomic power will be evolutionary, not revolutionary. That is why we are, concurrent with our atomic power program, continuing to spend millions of dollars and millions of manhours in heat cycle research and in development of better and more efficient power generating equipment for coal burning plants. Coal today is more essential than ever in helping to provide the nation's need for electric power. It will be even more necessary in the years ahead.

Left: John Corcoran, Counsel, Mrs. Jack E. Henderson, S. M. Cassidy, V-Pres., G. W. Kratz, V-Pres., E. C. and Mrs. Payne, all with the Pittsburgh Consolidation Coal Co.; Evans Dosce, Lawy Nicholas Kornick, member Penna. House Rep.; Jack E. Henderson, Traffic Mgr., Pittsburgh Consolidation Coal Co

Let it be established then that coal is basic to the continued growth of the electric utility industry. But what is the outlook for future growth of the electric utility industry? Just what kind of market for coal will this growth bring with it?

For the past 50 years, the electric utility industry has doubled its production of energy every decade. Last month the industry reached 100 million KW of generating capability. And there is no end in sight! The historical rate of increase is expected to continue. I feel reasonably certain that there will be about 400 million KW of installed capacity in 1975 and if the traditional rate of doubling every ten years continues, there will be from 1.5 to 1.8 billion KW by the time the year 2000 appears. Many of us may say we do not have to worry about the year 2000. But there will be a coal industry and electric power industry at that time and there will be stockholders to be satisfied.

There are some real opportunities for coal in such a growth picture. Right today the electric utilities constitute the coal industry's largest single customer — taking better than 22% of output. The years to come will find an even larger percentage of your production going to produce electric power.

Today, 50% of all power generated by electric utilities is generated with coal. Other fuels and water are the additional energy sources.

We know that there are large reserves of coal and that it will be economically feasible to market them for some years to come. This is not true of all other energy sources. With them there is the problem of waning supply which, naturally, brings with it increased cost. The combination of the two, short supply and high cost, cannot help but make way for greater use of coal.

H. V. Fritchman, V-Pres., Heath S. Clark, Chr. Finance, both with Rochester and Pittsburgh Coal Co.; Wm. H. Ritter, Pres., Reitz Coal Co.; Mrs. Heath S. Clark, John I. Gearhart, United Eastern Coal Sales Co.; Mrs. Richard T. Todhunter, Jr., Mr. Richard T. Todhunter, Jr., Gen. Mgr., Barnes and Tucker Co.; Mrs. John I. Gearhart, J. W. Kepler, V-Pres., United Eastern Coal Sales Co.; Mrs Wm. H. Ritter.

Water power will continue to be a factor but will be a minor competitor in the field of energy sources for the electric utility industry. Most of the desirable sites in the United States have already been developed. For example, TVA was originally constituted as a hydro-authority, but now has approximately half of its capacity in steam plants. This is indicative of the problems water-wheel generation faces.

While painting this optimistic picture about coal, we cannot forget that there are going to be some developments that will make it possible to extract the heat energy from coal more efficiently.

The first electric utility turbine generator used some seven pounds of coal to produce a single KWH of electrical energy. Today, the industry average is 1 pound of coal per KWH, and in a modern station it is down to about ¾ pound. It will be only ⅔ pounds per KWH when machines such as the 275,000 KW machine Westinghouse is building for Philadelphia Electric are installed.

Now this is phenomenal progress. In years to come, when similar progress is balanced against utility growth and the aforementioned factors of depletion and increased cost of other energy sources, there will still be a big market for coal. As a matter of fact, the electric utility market for coal will increase at a slightly slower rate than the rate of electric utility growth. You may expect to have to supply to the electric utilities in 1975 at least three times the coal you sold them in 1954.

When we consider energy sources available to electric utilities in the near future, atomic power is not a significant factor. Again looking in the crystall ball, it is estimated that in 1963, less than 2% of the power generated will be accounted for by the atom.

But let's do a little dreaming about the atom. Let's look ahead to the year 2000 and see what may have happened to coal.

Various authorities have estimated varying amounts up to 50% of all electric power generation will be accomplished with atomic

power. Strange as it may seem, this should not be alarming to the coal industry. Between the present time and the year 2000, the electric utility industry will have continued to grow at a tremendous rate. Again, there will be some developments along the line of efficiency of coal burning plants and some other sources of energy still in the picture. But by the year 2000, the coal industry must be able to produce 6 to 8 times more coal for the electric utility industry than today if it is to meet its responsibilities. This is approximately twice as much as the total coal mined today for *all* purposes. This, gentlemen, suggests a significant growth potential for the coal industry. It constitutes a tremendous opportunity, as well as a serious responsibility. I am sure the coal industry has initiated thinking which will build toward a capacity capable of supplying such an ultimate demand.

But this is not all. Let me widen the picture for just a moment to mention some other promising growth areas for coal. Already some of your competitors are turning to coal to supplement their products. The natural gas people are eyeing coal as a raw material source for making gas. And the conversion of coal to chemicals is already under way. In fact, the time may come when mankind will look upon the simple burning of coal as too wasteful of its precious by-products. Indeed, the future of coal abounds with opportunity for growth.

But this is not to say that along with these market opportunities there will not be serious problems for the coal industry in realizing this growth. Not the least important among them will be the need to make coal more economical and more attractive to use in the electric power field.

In a coal burning plant, about 50% of the cost of producing a KWH of energy resides in the coal itself. To electric utilities and to equipment manufacturers, this strongly indicates an area for study. It should also point out to the coal industry that research and development of production techniques which lead to a reduction in the price of the product would certainly be in order.

For a moment, let's consider what your industry and mine are doing and can do to continue to make coal even more desirable as a fuel for the electric utility industry.

Left: F P. Soen, N. Y. C. RR.; Wm. J. Murphy, Consoldiated Edison Co.; J. H. Willard, P. B. Belitz, R. E. Rogers, G. W. Childers, G. W. Hall, F. C. Mathiott, T. R. Fitzgerald, all with the New York Central Railroad and Edw. D. Kelly, M and J Tracey, Inc.

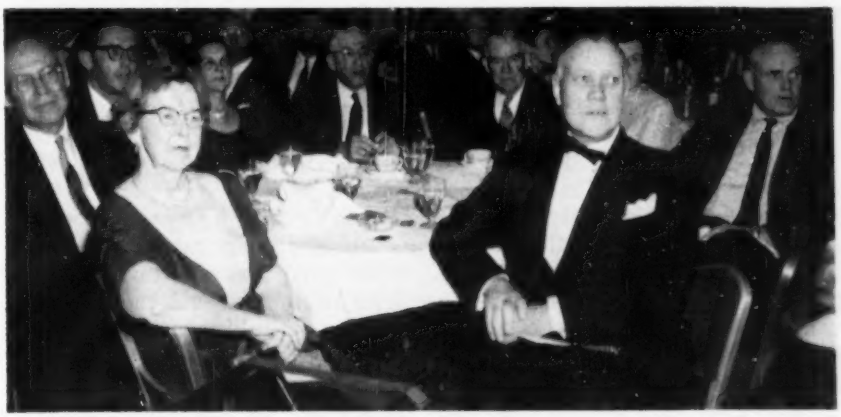
Basically, the challenge is twofold. It is not only necessary to bring down, but to develop more efficient means for using coal.

Opportunities for your research and development lie primarily in the direction of cost and price reduction. The key to this is mechanization and modernization. Electricity, the end of your key customer, the electric utility, becomes an important factor in modernization and mechanization. We at Westinghouse, who build equipment that can utilize electric power to implement new production techniques, are anxious to work with you. More power, more tools in the hands of each miner is the solution to lower cost coal at the tipple.

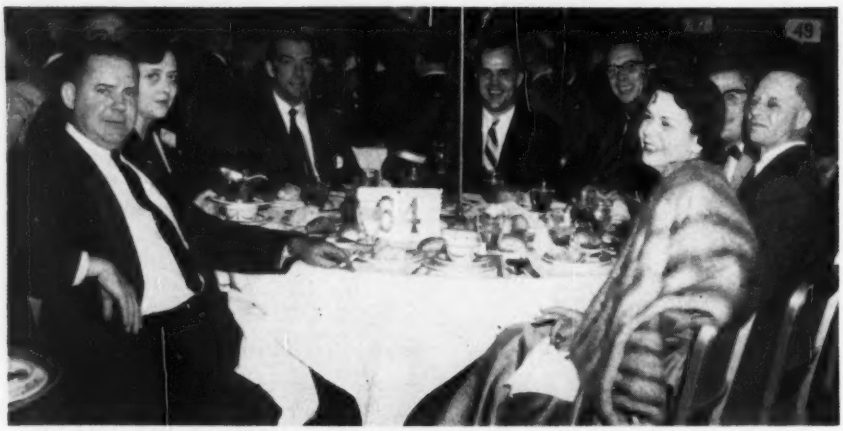
But, efforts toward reducing costs do not end here. Trantportation costs represent a sizable consideration in over-all fuel cost to a utility. The coal industry can go a long way in assuring its future by taking an interest in and helping find a solution to this problem.

Too often, I'm afraid, we assume that problems involved with coal handling at a power station are ones which utilities, alone, have to solve. Actually, your industry and mine are both in a position to help with this one. It's something that has to be considered if coal is to be made a more attractive fuel and a more economical one to use. In your cleaning and preparation plants there is much that can yet be done to better prepare the coal for the boiler. My industry, too, must develop new products to help improve conveyor systems, coal burning equipment, and the like.

Finally, the coal industry has an important responsibility to itself to make its product more acceptable to utilities in terms of considerations other than cost. To the utilities, the matter of public relations is of paramount importance. Therefore, for example, they look to the coal industry to help make that fuel clean burning. Here



Left: Mrs. Ralph H. Moore, Ralph H. Moore, Pres., C. A. Hughes Coal Co.; Ralph Moore, Jr., V-Pres., C. A. Hughes, Mrs. Robert T. Laing, Wm. Wetter, Pres., Rockhill oal Co.; Garfield Thomas, Dep. Secy., Penna. Dept Mines; Mrs. Maize Gutschall, Secy. to Chief Dept. Mines, Penna.; Frank Smith, Gen Council, Central Penna. Coal Producers; Robert T. Laing, Exec. Secy., Central Penna. Coal Producers.



Left: P. H. Vestal, V-Pres. Oprs.; Mrs. and Mr. H. J. Collins, Robert Schoene, Glenn Stauffer, C. W. Househalder, H. D. Letts and Mrs. P. H. Vestal, all from the Tasa Coal Co.

again, your industry and mine can team up to do the job. Among other things, preparation plants again will have to do a still better job — fly ash precipitators will have to be included if a community is to consider a coal burning power plant a "good neighbor."

These, then, are some of the important areas for activity on the part of the coal industry in preserving for itself the electric utility market. We recognize that the electric equipment manufacturer has a part in these activities. The initiative, however, in these particular endeavors rests with the coal industry.

In making coal more attractive to the electric utility industry, there is one area in which the equipment manufacturer should, and is, taking the lead. It is in the realm of more efficiently using coal and improving the heat cycle in the generation of electricity.

This would seem to be an endeavor that would decrease rather than increase markets for coal. Actually, the situation is this. Anything that can be done to make coal more attractive, more economical as a fuel, protects its future and expands its potential markets. Coal will grow in importance as a source of energy for the electric utility industry only as long as it continues to be the most economical fuel. If such a status can be maintained, other fuels will be ruled out and even the advent of nuclear power can be held off. Nuclear power, like anything else, will ultimately have to earn its place in our competitive system on an economic basis.

This, then, establishes the role of the equipment manufacturer in coal's future as an extremely important one.

The boiler maker, for example, is vitally interested in perpetuating coal as the chief fuel for the electric utility industry. These boiler builders are pouring great effort into new developments in their products.

The same can be said for the builders of coal preparation and handling equipment, and many others.

Westinghouse, too, is betting on the future of coal in the electric utility industry. Because of this, we are directing much of our research and development into the fields of metallurgy, fluid flow, chemistry and the heat cycle, itself. These investigations reflect themselves in the design of turbines, for example, that continue to wring still more horsepower out of every pound of coal. Such research and development has demanded greatly expanded facilities, millions of dollars and endless manhours.

We are working with higher steam pressures and temperatures in an attempt to push thermal efficiencies still higher. The Philadelphia Electric Company, with Combustion Engineering and us, is pioneering in this high temperature, high pressure field. The new 275,000 KW Westinghouse turbine to be installed on their system will operate on steam at 5000 PSI and 1200°F, highest temperature and pressure ever projected and will have a thermal efficiency of better than 40%.

Developments such as this superpressure turbine stem from things like better materials, improved blade design, superior knowledge concerning lubrication and cooling, and of the flow of steam through the turbine itself.

Westinghouse has built, or is building, three new facilities to especially study these and other related problems. Our new Research Laboratory in Pittsburgh is designed to devote increased effort toward accumulating fundamental knowledge of new high-temperature alloys.

At Blairsville, Pennsylvania, a new special alloys department plant will soon go into operation. There, scientists will work to develop metals capable of practical application at these higher temperatures and pressures. Their use will permit even a greater amount of the heat energy from coal to be translated into mechanical force to drive a generator.

Westinghouse is now dedicating a new multi-million dollar laboratory at South Philadelphia. It is devoted entirely to research and development in connection with all phases of steam turbine design and application. In addition, some basic research is to be done there in connection with the heat cycle, itself. Some important contributions to the art of wresting energy from coal have already come from this facility.

These few examples, I'm sure, persuade you that equipment manufacturers are vitally interested in power generating processes which rely on coal for energy. Westinghouse, as much, or more perhaps, than any other equipment manufacturer, recognizes the important role that coal has to play in our future electrical way of life.

And now a final word on atomic power. Because technical advancement is usually costly, it is often difficult to separate technical and economic progress. The cost of developing atom powered generating stations is high. This is due, principally, to the fact that development work can be carried only

so far on a theoretical or emperical basis. It soon becomes necessary to secure practical experience. This can be obtained only by building and testing and building again. In spite of this, it is absolutely essential that we progress toward more knowledge concerning the atom. In the interests of national defense and economical survival, we must be energetic in our nuclear development programs.

Certain foreign countries, some friendly, some not, faced with lack of fossil fuels and a nearly impossible fuel importation problem, are being forced to move rapidly in the direction of atom powered generation.

Do not become complacent in the thinking, however, that coal's economic advantage is assured in all places in this country. There are some areas in the United States where coal has had to give economic place to other fuels and to water power. The time may come when these other sources of energy will cease to be able to handle the demands for electric power. It is almost a foregone conclusion that atomic power will be able to compete with coal in these areas if present coal costs persist.

Generally speaking, then, it can be said that atomic power is coming faster technically than it is economically. For that reason, we have given some emphasis in this discourse to cost as the key protecting coal's future markets. Coal can continue to be important to the electric utilities only if it is the most economical source of energy, all things considered.

The co-existence of coal and the atom in the field of electric power generation is neither impossible nor undesirable. What the balance between the two will be in the years to come will depend largely upon the economic advantage one may gain over the other.

Gentlemen, the bright future for coal can be assured if all concerned take positive action toward lower costs and more efficient utilization of coal's energy. The challenge to the coal industry is clear cut. Some realistic, far-reaching planning will have to be done now if the coal industry is to lay hold of the opportunities the electric utility market offers.

● Germanium, the electronic-age metal that has made transistors possible, has been found in the ash of Kansas coal.

The results of preliminary spectrographic investigation of 24 samples of ash taken from Kansas coal showed that the germanium content ranged from 0.0036 to 0.0680 percent in the ash and from 0.00069 to 0.00485 percent in the total coal.

Using the price of germanium at $295 per pound, as it was in February of this year, John A. Schliecher and William W. Hambleton of the University of Kansas determined that the germanium content of the Kansas coal was worthy from $4.06 per ton of coal to $28.40 per ton.

One sample, which contained 21.8 ounces of germanium per ton of ash, was valued at $401.20 per ton of ash, if no germanium were lost in the processing. The scientists stated that this compared favorably with both present domestic and foreign sources of the metal.

The chief source of domestic germanium has been from the distillation of some residues derived from the smelting of zinc ores. In Germany, England and Japan, there are several plants already in operation which recover the metal from the fly-ash and residual ash of coal.

There has been some question in the past as to the practicability of getting germanium from coal because thicker veins of eastern coal showed low concentration of the metal. However, the Kansas scientists pointed out, the Kansas coal seams are much thinner and this might be a factor in the high concentration found in the study.

The U. S. Department of Interior Geological Survey is planning to conduct further investigation of the germanium found in the Kansas coal next spring.

● Greater horsepower and faster engine speeds for the D6, D4, and D2 Tractors has been announced by Caterpillar Tractor Co., Peoria, Ill.

This will mean more production for owners, more profitable operation because of the increased travel speeds and greater power, the Company says.

Drawbar horsepower of the D6 has been increased from 66 to 75 and rpm from 1400 to 1600.

Drawbar horsepower of the D4 has been increased from 43 to 48 and rpm from 1400 to 1600.

Drawbar horsepower of the D2 has been increased from 35 to 38 and rpm from 1525 to 1650.

Travel speeds of the tractors will increase according to engine speeds.

Increased horsepower for these three tractors is just one of the refinements made during the past year to Caterpillar products.

● A general agreement was reached today (December 20) covering the purchase by LeTourneau-Westinghouse Company, of Peoria, Illinois, of the plant and assets of the J. D. Adams Manufacturing Company, of Indianapolis, Indiana, Edward O. Boshell, Chairman and President of Westinghouse Air Brake Company announced.

The agreement is subject to approval by Adams shareholders and necessary corporate action, as well as the adjustment of several legal and technical matters. As part of its diversification program, Westinghouse Air Brake last year bought the earth-moving equipment business of R. G. LeTourneau Inc. and organized the LeTourneau-Westinghouse Company.

The acquisition of the Adams Company adds a complete line of road maintainence motor-graders to the products now distributed by the Peoria firm, which makes a full line of earth-moving equipment, incuding scrapers, bulldozers, and hauling units. The company, which was the first to equip earth-moving scrapers with pneumatic tires, is a leading U. S. manufacturer of this equipment which is used throughout the world.

● In a recent study of the nation's electric utility plants, the National Coal Association found that plants in 22 states and the District of Columbia used coal in more than 50% of their electric generation.

Of all the energy generated by the electric utilities with fuels last year—coal, oil and gas, leaving hydro power out of the reckoning —coal's share was 65% of the total, or 218,800,000 kilowatt-hours.

Report of Safety Committee

S. Austin Caperton, Chairman
Annual Convention National Coal Association
November 17-18, Pittsburgh, Pennsylvania

As Chairman of your Safety Committee it becomes my duty to make a report for that committee and on the activities of your safety department. Too, I always like to take stock in just what the industry is accomplishing from a safety standpoint. Figures on fatalities are now available up to and including September and non-fatalities up to and including July. The story that those figures tell is not the best and it becomes necessary to satisfy ourselves as to the reason that the record for this year so far is not as good as it was for the similar period of last year. Taking stock of the entire situation I am firmly convinced that there has been no let up in safety, that we have moved forward with every force at our command and that the reasons behind the increase in accident rates are first, that intermittent and slow running time always operates to the detriment of safety and second that as we have progressed to the best accident record the industry has ever known, further progress becomes that much harder. I cannot help but express the belief that the cooperative movement that is now under way at the present time will, in the future, continue the downward trend but it behooves everyone connected with safety, and I do mean everyone, to work just a little harder and just a little longer to accomplish the goals that are ahead of us.

It is not my purpose to report to you in detail on the activities of your department. The Safety Committee has constantly reviewed, deleted from and revised its program and that department has moved forward constantly within its budgetary and personnel limitations. The safety directors of the industry have been given the advantage of everything that is available so that they individually may be advised of all methods, equipment, practices, and everything of whatever nature would serve to implement the job that they are doing with their individual organizations.

Yes, the job can be done, for some of the records by companies, by mines and for individuals that have been honored in the past year are nothing short of phenomenal and it should be the purpose of everyone connected with the industry to see that those records are matched everyplace.

Obviously, certain limitations are imposed on the cooperative work that is carried forward by your department. But the increasing willingness of everyone to sit down around the table and come up with some sensible answer is a heartening sign. Your department functions in which might be called a liaison committee advisory to the Bureau of Mines in its administration of the Federal Coal Mine Safety Act. A recently adopted policy, sponsored in part by your department, assures that when new schedules are made or old schedules revised that the Bureau will sit down with this so-called committee and receive and duly consider the viewpoint of all concerned. Actively serving are Marling Ankeny, Safety Director of the Bituminous Coal Aperators Association; Jim Benson, Safety Director, Southern Coal Producers Association; Charlie Gerguson, Safety Director of the United Mine Workers of America and the Director of your department. At the present time there are a number of cooperative projects under way all in some manner concerning safety and the majority having to do with enforcement under the law. I will name a few of them but not go into detail since many of them will be subjects of discussion from the floor today. There is rock dusting, both content and the rock dusting of old entries, speeding up the securing of permissibility approvals, safety of men in cakes and skips, fire resistant belts, 20 and 30 year awards, continuous service on first aid teams, the loading out of gob, and many other of lesser significance.

After all any safety program must have as its fundamental basis education and cooperation, and first-aid training, accident-prevention training, Holmes Safety Council work, and individual plant, institute and district safety programs all play their major part. With each of these, we cooperate to the fullest extent of our ability. We are continuing our cooperative work with the Federal Government, with all state governments, with the union, with various institutes, and as a matter of fact, in any place where chances of affirmative results are evident. As I stated in the beginning, this report to you was to be of a general nature and I am sure in the minutes that follow very worthwhile information will be made available as regards the actual undertakings that some time in the future we hope to successfully conclude. I want to thank all company officials and particularly the safety directors and officials in charge of accident prevention for the help that they have given us so far and urge upon each of you that in the months to some every possible bit of extra effort also be expended.

Model HD-20 Allis-Chalmers tractor working with a Model 2400 Lima dragline at the Lingle Coal Company, Shawville, Pa.

Mobile service school "lab" session on Mesabi Iron Range in Northern Minnesota. Mining company personnel learn what servicing is needed to keep GM torque converters in top operating conitions.

Detroit Diesel service school in session at the factory in Detroit. Similar scenes will be enacted this year in new training centers opened by General Motors in Atlanta, Denver and San Leandro, California.

● The Detroit Diesel Engine Division is further increasing its service training facilities for General Motors Diesel engine owners and operators by participating this month in the first of three regional training centers established by General Motors in Atlanta, Denver and San Leandro, California.

The new facilities bring a third level of training to Detroit Diesel's service training program which had already reached a scope unprecedented in the activities of industrial engine manufacturers.

Established in 1946, the program already included concentrated courses at the factory school in Detroit for distributors, end-product manufacturers and owners operating their own servicing facilities. In addition, mobile schools have been traveling the country since 1948 bringing factory-approved operating and maintenance procedures to owners and operators right on their jobs. The new level just established provides an "in-between" course to those desiring more training than is offered in the two-day mobile school sessions, but not needing the intensive two-to-five-week courses offered at the factory.

The first of these regional Diesel schools starts this month in Atlanta where it will offer one-week courses over a period of four months. The school will then move to the facilities at San Leandro and Denver for similar periods. Classes are manned by specially trained instructors and are held in modern laboratories and shops. They offer specialized training on both the theory and practical aspects of two-cycle Diesel operation, dynamometer test and maintenance. All GM (Detroit Diesel) engines, industrial torque converters, and hydraulic marine gears are to be covered.

Another expansion in its training facilities was also effected by the Division last Fall. Mobile units were enlarged to include all the training aids required to offer operating and maintenance courses on all three series of Detroit Diesel engines and major industrial and marine accessories. Diesel tractor-trailers twice the size of former units are now used to carry the equipment needed. This includes live and cutaway engines, sub-assemblies, slides, films and all tools needed for trouble shooting, tune up and the assembly of various components.

According to E. F. Bentley, Detroit Diesel's general sales manager, the Division has always regarded proper training in GM Diesel operation and maintenance an important part of every engine sale. "Engine downtime" he said "is figured in terms of lost production such as tons of fish, barrels of oil or costly delays on construction projects and our extensive training facilities are aimed at helping owners and operators cut such downtime to a minimum."

Over 30,000 owners, operators and manufacturers' personnel have already attended these courses. Now with mobile schools traveling the country with extended facilities and concentrated training available in Atlanta, Denver and San Leandro in addition to Detroit the training needs of any GM Diesel operator can be satisfied either right on his job or comparatively close by. Training for owners and operators is arranged through Detroit Diesel distributors and dealers. Training for manufacturers' personnel is arranged direct with the factory.

● A new 16-page illustrated folder on malleable pipe couplings and fittings has been published by Gustin-Bacon Manufacturing Company, Kansas City.

Thirty photographs demonstrate the savings in time and labor made by Rolagrip couplings for plain end pipe and Gruva gripe and Gruvajoint couplings for grooved pipe. Diagrams and complete specifications for these products, as well as Gruva-grip fittings, are included. The new folder is for petroleum, mining, sprinkler system, original equipment manufacturing and general industry.

For a free copy of the new coupling folder, write today to Gustin-Bacon Manufacturing Company, 210 West Tenth Street, Kansas City 6, Missouri.

● Roomy interior and heavy duty features of a new cab for Caterpillar No. 6 Shovels are described in a catalog sheet recently issued by Crenlo, Inc., national manufacturers of automotive and industrial parts in Rochester, Minnesota.

For additional information and copies of the literature on the cab (Model 2431-AA), write Dep't KP, Crenlo, Inc., Rochester, Minn.

● To meet the need for a greater capacity hauling unit in the size powered by the Model C Tournapull, LeTourneau-Westinghouse Company, Peoria, Ill., announces that the capacity of the new Model C Rear Dump has been increased from 18 to 22 tons. The price remains the same.

In terms of yardage, the struck capacity of the new unit now is rated at 14.7 yards — its heaped capacity 17 yards.

To provide for this greater load-carrying capacity the inside width of the Rear Dump has been increased 10 inches at the top. Its top length has been increased 2 inches.

This increase in size is reflected in general dimensions of the Model C Tournapull Rear Dump.

The overall length of the entire machine in traveling position is now 30 feet — 9 inches longer than heretofore, while the wheelbase in the same position is 16′, 4″ — an increase of 6 inches. The gauge of the Rear Dump (width center to center of tires) is now 9′, which is 8⅞″ larger than before.

Ground clearance of the Rear Dump now is 22″. Eight inches less than heretofore, this provides even greater stability.

Some changes in reinforcements have been made to achieve greater ruggedness for the new Model C Rear Dump, which is designed to be loaded by shovel, dragline or other types of auxiliary loading equipment. Equipped with constant mesh transmission, the machine weighs 42,690 pounds. With sliding gear transmission it weighs 42,440 pounds.

Other components which have long characterized this size LeTourneau-Westinghouse equipment remain the same. It is mounted on four 21.00 x 25 24-ply tires, it possesses a maximum turning angle of 90° left and right, and it has multiple disc air brakes on all four wheels — a total of 3,763 sq. in. of braking surface.

Its forward speeds with constant mesh transmission range from 2.5 to 29.2 mph — with sliding gear transmission from 2.9 to 30.2 mph, at 2,000 rpm.

● Booklet by Heyl and Patterson, Inc., 55 Fort Pitt Blvd., Pittsburgh 22 describes the Heyl and Patterson Cyclone for Slurry, Thickening, Slurry Classification, Slurry Clarification, Recovery of Suspended Solids.

Heyl and Patterson is a firm of contracting engineers specializing in the design, fabrication and erection of Heavy Bulk Materials Handling Equipment. This broad category includes coal preparation plants, complete conveying systems, coal and ore bridges, railroad car dumpers, boat loaders and unloaders . . . in fact, all types of equipment used for the transportation, conveying and transfer of coal, ore, bauxite and other Bulk Materials.

In the mining industries, the performance of Heyl and Patterson products through the years has gained the company the reputation as one of the foremost designers and producers of preparation and processing equipment.

One of the most recent products developed by Heyl and Patterson has been the H & P Cyclone.

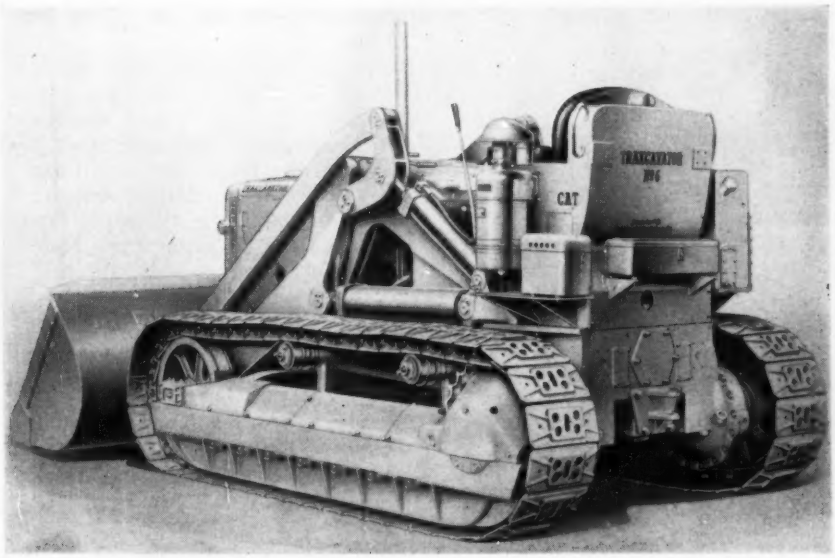
The purpose of this booklet is to explain the operation of the Cyclone and to show where experience has proven the Cyclone to be an efficient and low-cost processing tool.

● The appointment of Paul I. Birchard as vice president and general manager of Westinghouse Air Brake Company's Le Roi Division in Milwaukee, Wisconsin, was announced today by Edward O. Boshell, Chairman and President of the company.

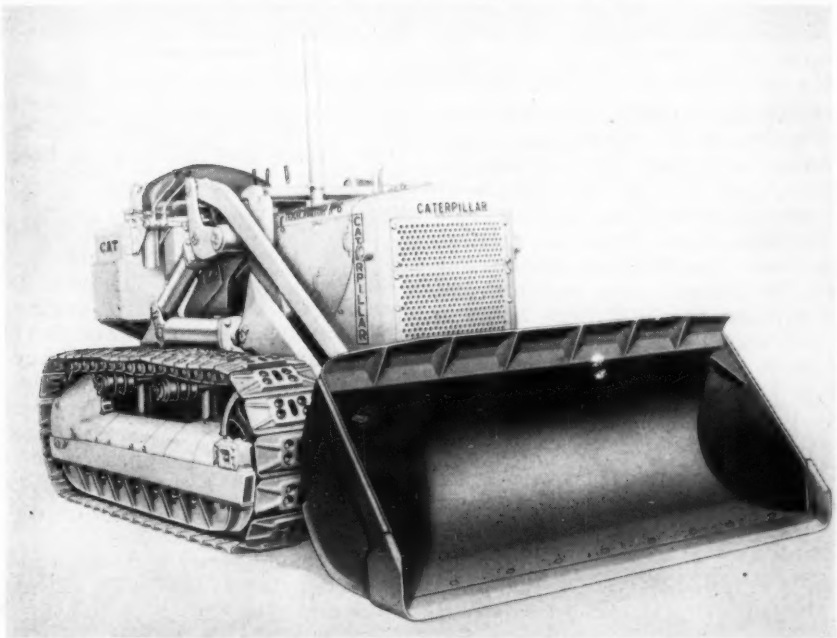
Mr. Birchard will replace Edward J. Green, who has been temporary general manager of the Le Roi Division since the resignation of T. O. Liebscher, former president of the Le Roi Company.

On October 1, 1954, Le Roi, which manufactures air compressors, internal combustion engines, and tools for the construction and mining industries, was reorganized as a division of Westinghouse Air Brake. Mr. Green will return to Westinghouse Air Brake headquarters in Pittsburgh to resume his position as executive assistant to the President.

For the last six years, Mr. Birchard, who has some twenty-six years experience in the diesel engine industry, has been vice president and general manager of the Enterprise Engine and Machine Company, of San Francisco, California. Before that he was Vice President in charge of engineering and manufacturing. His previous twenty years experience was gained with such diesel engine makers as: General Motors, Fairbanks-Morse, and Winton. During World War II, Mr. Birchard was a Navy Commander and also served as supervisor of shipbuilding in a Navy-owned shipyard.



Increased horsepower, faster travel speeds and greater production with a new 2¼ cubic yard bucket are among the several improvements of the Traxcavator No. 6 Shovel. In addition to the increased bucket capacity the material handler has a two position feature that allows adjustment of the bucket for either excavating work or for loading loose material



Increased horsepower and faster travel speeds are among several improvements of the Traxcavator No. Shovel. This machine will give greater production with the new 2¼ cubic yard bucket and improved bucket action with a new hydraulic pump.

● Increased horsepower and faster travel speeds are among the several improvements of the Traxcavator No. 6 Shovel. This machine will give greater production for construction men, loggers, factories, power plants and others with the new 2¼ cubic yard bucket and improved bucket action with a new hydraulic pump.

The engine in the new No. 6 now delivers 100 horsepower at the flywheel.

In addition to the increased bucket capacity from 2 to 2¼ cubic yards, No. 6 Shovels now have a two-position feature that allows maximum use of bucket capacity under normal conditions and obtaining of maximum scouring action and dumping action when handling sticky, hard-to-dump materials. This machine features the outstanding balance characteristics already associated with its predecessor.

The Traxcavator No. 6 Shovel travels at almost 30% higher speeds with increases from 1.4 mph to 1.9 mph in first gear, from 5.8 mph to 7.4 mph in fifth gear, and with corresponding increases in other gears.

The new hydraulic pump increases the pressure in the hydraulic system to 1450 psi. This operating pressure provides greater lifting power for faster bucket action. In addition, the hydraulic system in the new unit will be equipped with a full flow filter.

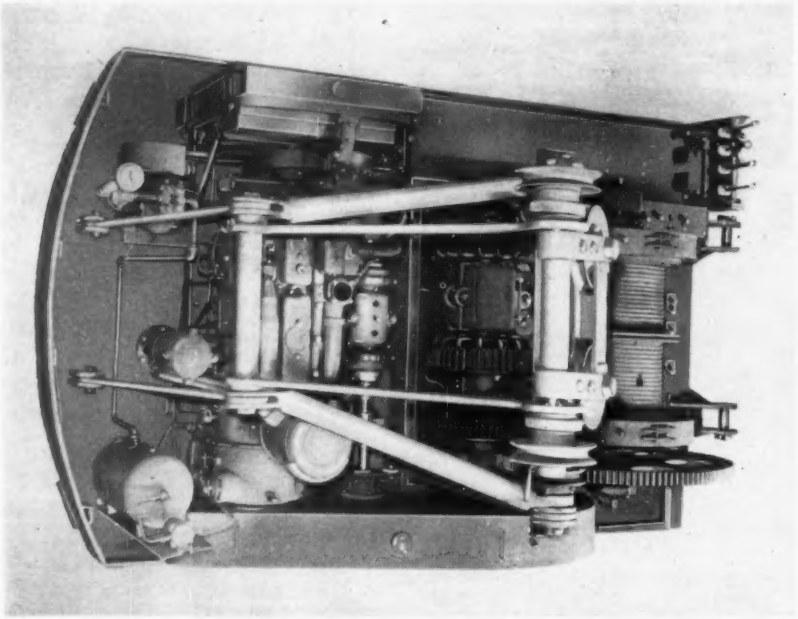
● Appointment of Kenneth O. Williamson as MARION-OSGOOD-GENERAL Sales Manager has been announced by Marion Power Shovel Company.

Kenneth O. Williamson

Mr. Williamson is expected to concentrate his activities on the sale of MARION-OSGOOD-GENERAL machines in sizes of 4 cubic yards and under, through distributor organizations throughout the United States and Canada.

Mr. Williamson has been associated with The Osgood Company, which became a subsidiary of Marion Power Shovel Company in mid-year of 1954, since 1941, starting in the production department. After serving overseas in World War II, he joined the Osgood sales organization and served successively as division sales manager, assistant sales manager and sales manager.

The broad range of MARION-OSGOOD-GENERAL equipment marketed through distributors includes power shovels in sizes from ½ through 4 cubic yards, crawler mounted cranes up to 160 tons, truck cranes from 15 to 35 tons, Mobilcranes from 25 to 45 tons, log loaders, draylines, clamshells, backhoes and pile drivers.



Machinery deck of new MARION 83-M shows drum, clutch and independent propel shafts and power unit, arranged for easy accessibility.

● The new Marion 83-M — an all-purpose excavating machine with special features designed to make it a 60-ton special lifting crane — is being announced by the Marion Power Shovel Company of Marion, Ohio.

As a two-yard shovel, the 83-M was designed for use in construction, quarrying, and mining. But the machine can be easily converted in the field to a dragline, clamshell, pull shovel, or crane.

The 83M features both heavy-duty construction and special design features for crane service. A third drum is available on the 83-M crane for handling piles, snaking-in or snubbing loads, or it can be used as a high speed boom hoist. The machine has a high retractable and self-raising gantry which is raised or lowered under power in a matter of minutes. An independent boom hoist, optionally available, provides "power up and power down" in the raising and lowering of loads and it uses machinery power instead of a brake to control lowering of the boom.

All models of the 83-M feature a torque converter as standard equipment. In addition to bringing a substantial increase in the work capacity of the machine, the torque converter reduces shock to machinery, increases ease of operation, and gives the operator as much operating speed as the load will permit, within the limits of the horsepower of the engine.

One of the outstanding new features of the 83-M is new self-cooling swing clutches. They are designed to virtually eliminate heat damage to the expanding rubber tube of the clutch by isolating the tube from the friction surfaces by means of aluminum friction shoe carriers. Heat from the friction surfaces is carried to cooling fins on the friction shoe carriers and dissipated through large holes in the friction housing. Not one single case of a heat damaged rubber tube has been discovered in two-year field tests with the new swing clutch.

Swing, propel and crowd retract clutches never require adjustment and hoist and crowd-out clutches have only one adjustment.

The Marion 83-M has ball or roller bearings at all principal friction points and major gear housings on the machine are enclosed in an oil bath.

Marion air control frees the 83-M from all levers, bell cranks, toggles, pins, and so forth. Only 12 pounds hand pressure by the operator on compensating-type air control valves releases full machine power.

The machine is designed for heavy duty. All gears are heat treated, shafts are alloy steel, grooved drums are alloy steel and they are all mounted on anti-friction bearings. The main frame is all-welded, assuring perfect alignment for the life of the machine.

Featuring simple design, the 83-M has only two horizontal shafts on the machinery deck and only 16 gears in the entire machine, aside from front end equipment. All units can be easily reached for maintenance and adjustment. Lubrication fittings are grouped and located for ease of lubricating remote points.

Other features include two propel brakes for ease of steering, a low center of gravity resulting from locating machinery well back of the center journal, specially-designed butt joints for ease in changing boom lengths in the field, machine grooved drums and large diameter sheaves for longer life of wire rope, full vertical vision for the crane operator, copper tubing and reinforced rubber hose for air lines, manganese steel crawler pads and self-cleaning crawlers, and a choice of diesel, gasoline, or electric power.

Packaged engine torque converter units engineered for the three largest Caterpillar Diesel Engines, D397, D386 and D375, have been announced by Caterpillar Tractor Co.

One series of these new packages will be identified as D397-16-1, D386-16-1, D375-16-1. These units consist of the standard engine, dariator (suction or blower fan), three-stage torque converter, output drive shaft, rear support, torque converter fluid cooling system and torque converter fluid charging system designed in conjunction with the engine fuel system so that no special torque converter fluid is required.

The second series of these units are designated as D397-16-2, D386-16-2 and D375-16-2, which are identical to the 16-1 series except a disconnect clutch is applied between the engine and torque converter.

Optional equipment available for all of these units include engine mounted air compressors, output shaft governor drives, ledge mounted base, shallow and deep oil pans, structural steel bases and engine throttle air controls.

Typical applications for which these units are adaptable include locomotives, oil field equipment, yarders, shovels and draglines.

These package units are sold and serviced through Caterpillar's world-wide dealer organization.

BENJAMIN COAL COMPANY

Benjamin Coal Company uses a dragline and shovel team stripping bituminous coal near Ansonville, Pennsylvania. The contractor here employs a Manitowoc Model 2000 shovel cleaning and preparing portions of the pit for faster excavation by the Manitowoc Model 4500 drag positioned above the vein. The dragline pictured is equipped with a 6 yard bucket, 120′ boom and Caterpillar engine. In the background a Manitowoc Model 3500 Hi-Lift shovel strips overburden in preparation for additional coal excavation by the other two rigs.

Caterpillar Diesel D8 Tractor equipped with No. 8A Bulldozer is stripping overburden on coal mining operations near Nitro, West Virginia.

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USED EQUIPMENT

Item C134 Caterpillar D8 Diesel tractor, equipped with Caterpillar 8A blade and No. 25 control unit, canopy top, crankcase guard. Has new rollers and one new sprocket ring. **CERTIFIED BUY.** F.O.B. Clearfield, Pa. ..**$10,500.00**

Item WV130 Caterpillar Model D8 tractor mounted with Model 19A14010 Cardwell Side Boom. Equipped with crankcase guard. Diesel engine just rebuilt before unit was traded-in. This machine is in excellent condition. **BONDED BUY** F.O.B. Clarksburg, W. Va. **$9,250.00**

Item C180 Caterpillar D7 Diesel tractor, equipped with Caterpillar No. 25 control unit and LeTourneau straight blade. Canopy top, tracks and rollers good. **CERTIFIED BUY** F.O.B. Clearfield, Pa. ----------**$6,500.00**

Item P280 Caterpillar D7 Diesel tractor, equipped with LaPlant Choate hyd. angledozer, radiator guard, crankcase guard, front pull hook, canopy top, track rollers, idlers, and sprockets good. New Paint. **BONDED BUY** F.O.B. Pittsburgh, Pa. ---------**$13,000.00**

Item P121 Caterpillar Model 17000 engine, rebuilt and guaranteed. **BONDED BUY** F.O.B. Pittsburgh, Pa. ----------**$6,500.00**

Item C174 Caterpillar No. No. 112 Tandem drive diesel Motor Grader with cab. **CERTIFIED BUY** F.O.B. Clearfield, Pa. ---------**$3,200.00**

Item C137 Allis Chalmers HD19 tractor equipped with Baker hydraulic straight blade—fair condition. **BUY AND TRY** F.O.B. Clearfield, Pa. ----------**$6,500.00**

Item P287 International Model D9 diesel tractor, equipped with: crankcase guard, track roller guards, pull hook, lighting system. Mounted with: Bucyrus-Erie hydraulic angle dozer, Isaacson Winch. Excellent running condition—Painted and Decaled. **CERTIFIED BUY.** F.O.B. Pittsburgh, Pa. ----------**$4,650.00**

Item E137 TD14 International tractor, equipped with Bucyrus-Erie hydraulic angling blade. Tractor has just had $2,000.00 in repairs put on it. In very good condition. **BUY AND TRY** F.O.B. Erie, Pa. ----------**$5,500.00**

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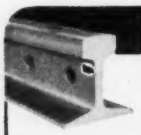

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McCarthy — Highwall Auger 30" dia. — 90' drills — Conveyors. Gas motor driven, used for short time only — at low price — located at Pittsburgh mine.

Page 9W 10 yd. Dragline for high cover.

Joy 6SC Shuttle Cars, in good operating condition.

Joy 5SC Shuttle Cars in good operating condition.

Jeffrey 65 Style Shuttle Cars and **66 Style Shuttle Cars.**

Baker Fletcher Roof Bolting Drill, mounted on rubber.

Joy 8BU, 11BU, 14BU Loader.

Joy T-1 Cat. Track good as new.

Joy 30" Belt Conveyor complete, and 1200' long.

Goodman 512 Cutters with bugduster vibrating screen 4' x 10' single.

Coal Mine Hoist with 300 HP motor and controls.

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Joy 10SC Shuttle Car.

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JANUARY, 1955

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Walker Machinery Co. ----Insert between Pages 2 and 3
Agency—Hosler Advertising, Inc.

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